

Complete Summary

GUIDELINE TITLE

Exercise and physical activity in the prevention and treatment of atherosclerotic cardiovascular disease.

BIBLIOGRAPHIC SOURCE(S)

Thompson PD, Buchner D, Pina IL, Balady GJ, Williams MA, Marcus BH, Berra K, Blair SN, Costa F, Franklin B, Fletcher GF, Gordon NF, Pate RR, Rodriguez BL, Yancey AK, Wenger NK. Exercise and physical activity in the prevention and treatment of atherosclerotic cardiovascular disease: a statement from the Council on Clinical Cardiology [trunc]. Circulation 2003 Jun 24;107(24):3109-16. [71 references] [PubMed](#)

GUIDELINE STATUS

This is the current release of the guideline.

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SCOPE

DISEASE/CONDITION(S)

Atherosclerotic cardiovascular disease including coronary artery disease (CAD), angina pectoris, heart failure (HF), and peripheral arterial disease and claudication

GUIDELINE CATEGORY

Management
 Prevention
 Treatment

CLINICAL SPECIALTY

Cardiology
Geriatrics
Internal Medicine
Nutrition
Physical Medicine and Rehabilitation
Sports Medicine

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To summarize the evidence for the benefits of physical activity in the prevention and treatment of cardiovascular disease
- To provide suggestions to health-care professionals for implementing physical activity programs for their patients
- To identify areas for future investigation

TARGET POPULATION

Patients with or at high risk for atherosclerotic disease

INTERVENTIONS AND PRACTICES CONSIDERED

1. Physical activity programs*
2. Exercise programs*
3. Exercise stress testing in selected individuals
4. Patient, community, and provider education concerning the value of exercise
5. Encouraging the development of exercise programs and facilities in schools and communities

*Note: This guideline focuses on aerobic physical activity and does not directly evaluate resistance exercises, such as weight lifting, because most of the research linking physical activity and cardiovascular disease has evaluated aerobic activity.

MAJOR OUTCOMES CONSIDERED

- Total mortality
- Cardiac mortality
- Incidence of nonfatal myocardial infarction (MI)
- Incidence of sudden cardiac death
- Exercise tolerance
- Peak V_{O_2}
- Quality of life

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review
Review of Published Meta-Analyses

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Whenever possible, the writing group has cited summary articles or meta-analyses to support conclusions and recommendations.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

This statement was approved by the American Heart Association Science Advisory and Coordinating Committee in February 2003. It was published in *Circulation* 2003;107:3109-3116.

The statement was also reviewed by the American College of Sports Medicine.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The evidence summarized in these guidelines and more extensively presented in the 1996 Surgeon General's Report (US Department of Health and Human Services, 1996) attests to the value of exercise and physical activity in reducing the incidence of coronary heart disease. Indeed, the original American Heart Association (AHA) Statement on Exercise in 1992 (Fletcher et al., 1996) was among the first documents to conclude that physical inactivity is a major coronary artery disease (CAD) risk factor. Because atherosclerotic vascular disease remains the major cause of death in many countries, it is important that health-care providers support the implementation and maintenance of exercise programs for their patients across the lifespan.

Health professionals should personally engage in an active lifestyle to familiarize themselves with the issues involved in maintaining lifelong physical activity and to set a positive example for patients and the public. This may increase the likelihood that health-care providers will recommend physical activity to their patients. Health-care providers should use their influence as parents and community members to encourage schools to provide physical education programs that teach the importance of, and the skills necessary for, developing and maintaining physically active lifestyles. There is growing recognition of the contribution of social support and the value of integrating behavioral changes into daily routines to sustain improvements in physical activity levels. For this reason, health-care providers should advocate changes in organizational practices within work sites and civic and recreational settings that encourage active living. Health professionals should also encourage their communities to make facilities for physical activity available to the public and to engineer environments conducive to safe physical activity. Such environmental engineering efforts should allow purposeful physical activities, such as walking to work and climbing stairs, to be used in lieu of labor-saving devices. Health professionals should support public health efforts that encourage these active lifestyles.

The importance of physical activity for health and the use of exercise training in managing selected disease states should be incorporated into the education of physicians and other medical professionals. A physical activity history is an important component of the health history, and health-care providers should include the patient's habitual physical activity as part of the medical record. Health-care providers should identify for patients the importance of physical

activity as primary or adjunctive therapy for such medical conditions as hypertension, hypertriglyceridemia, glucose intolerance, and obesity.

Health professionals should prescribe physical activity programs commensurate with those recommended by the Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM) (i.e., 30 minutes or more of moderate-intensity physical activity such as brisk walking on most, and preferably all, days of the week) (Pate et al., 1995). Patients should be encouraged to engage in a variety of physical activities and to progressively increase their activity as tolerated. Detailed guidelines for prescribing exercise in patients with and without cardiovascular disease are provided in the AHA Exercise Standards for Testing and Training (Fletcher et al., 2001). Recommendations are also available for the incorporation of resistance and flexibility exercise training (Pollock et al., 2000). Health-care professionals should provide an exercise prescription to patients and should familiarize themselves with behavioral change material available from the Provider-Based Assessment and Counseling for Exercise Program (PACE) (Calfas et al., 1996) and the Activity Counseling Trial (ACT) (King et al., 1998).

It is not necessary that all individuals beginning a moderate-intensity and moderately progressive exercise program undergo an exercise stress test, although this issue remains controversial. A Consensus Group from the AHA and the American College of Cardiology (Gibbons et al., 1997) considered routine exercise stress testing before the initiation of a *vigorous* exercise program in healthy men >45 and women >55 years of age as a Class IIb Recommendation (i.e., a condition in which the usefulness and efficacy is not well established). Selected exercise testing should be performed at the discretion of the physician before vigorous exercise in patients with known cardiovascular problems.

Health-care providers caring for patients with diagnosed cardiovascular disease should support the development of exercise programs to manage these patients and make appropriate referrals for treatment. There are also effective strategies to promote active lifestyles for whole communities that complement those designed for individuals. The Task Force on Community Preventive Services has completed an evidence-based review of these community strategies ("Increasing physical activity," 2001). The 6 strategies deemed effective were: (1) large-scale, intense, highly visible, community-wide campaigns; (2) point-of-decision prompts that encourage people to use the stairs instead of elevators or escalators; (3) physical education programs in schools; (4) social support programs (such as buddy systems and walking groups); (5) individually adapted behavior change programs; and (6) enhanced access to places for physical activity. For example, 12 studies have studied increasing access to places for physical activity, with a median effect size of a 26% increase in persons exercising at least 3 days per week.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Regular physical activity using large muscle groups, such as walking, running, or swimming, produces cardiovascular adaptations that increase exercise capacity, endurance, and skeletal muscle strength. Habitual physical activity also prevents the development of coronary artery disease (CAD) and reduces symptoms in patients with established cardiovascular disease. There is also evidence that exercise reduces the risk of other chronic diseases, including type 2 diabetes, osteoporosis, obesity, depression, and cancer of the breast and colon.

POTENTIAL HARMS

- The most common risk of physical activity in adults is musculoskeletal injury.
- Risk of injury increases with obesity, volume of exercise, and participation in vigorous exercise such as competitive sports, whereas higher fitness, supervision, stretching exercises, protective equipment such as bike helmets, and well-designed environments protect against injury.
- Vigorous physical activity acutely increases the risk of sudden cardiac death and myocardial infarction among individuals with both diagnosed and occult heart disease.
- A variety of congenital and acquired conditions such as hypertrophic cardiomyopathy, coronary artery anomalies, aortic stenosis, and cardiomyopathies are associated with sudden death during vigorous activity in children and young adults.

Subgroups Most Likely to Experience Harms

- The relative risk of both exercise-related myocardial infarction and sudden death is greatest in individuals who are the least physically active and who were performing unaccustomed vigorous physical activity.
- Because atherosclerotic coronary artery disease (CAD) is the most frequent cause of exercise-related events, the incidence of such events is higher among patients with known atherosclerotic coronary disease.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Tool Kits

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003 June 24

GUIDELINE DEVELOPER(S)

American Heart Association - Professional Association
American Stroke Association - Disease Specific Society

SOURCE(S) OF FUNDING

American Heart Association

GUIDELINE COMMITTEE

Council on Clinical Cardiology
(Subcommittee on Exercise, Rehabilitation, and Prevention)

Council on Nutrition, Physical Activity, and Metabolism
(Subcommittee on Physical Activity)

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Primary Authors: Paul D. Thompson, MD; David Buchner, MD; Ileana L. Piña, MD; Gary J. Balady, MD; Mark A. Williams, PhD; Bess H. Marcus, PhD; Kathy Berra, MSN, ANP; Steven N. Blair, PED; Fernando Costa, MD; Barry Franklin, PhD; Gerald F. Fletcher, MD; Neil F. Gordon, MD, PhD; Russell R. Pate, PhD; Beatriz L. Rodriguez, MD, PhD; Antronette K. Yancey, MD; Nanette K. Wenger, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The American Heart Association makes every effort to avoid any actual or potential conflicts of interest that may arise as a result of an outside relationship or a personal, professional, or business interest of a member of the writing panel. Specifically, all members of the writing group are required to complete and submit a Disclosure Questionnaire showing all such relationships that might be perceived as real or potential conflicts of interest.

ENDORSER(S)

American College of Sports Medicine - Medical Specialty Society

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the American Heart Association Web site:

- [HTML Format](#)
- [Portable Document Format \(PDF\)](#)

Print copies: Available from the American Heart Association, Public Information, 7272 Greenville Ave, Dallas, TX 75231-4596; Phone: 800-242-8721

AVAILABILITY OF COMPANION DOCUMENTS

Get With the Guidelines (GWTG) provides disease-specific process documents and tools for in-house quality improvement. See the [American Heart Association Web site](#) for more information. See the related QualityTool summary on the [Health Care Innovations Exchange Web site](#) for this related tool set.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on October 14, 2004. The information was verified by the guideline developer on December 14, 2004.

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